

9/11 Ten Years On - The Health Effects On Rescue Workers

Written by Christian Nordqvist on September 7, 2011

A decade on, 9/11 rescue workers and WTC exposed civilians have been found to have a higher burden of mental and physical illness, a 19% higher risk of developing [cancer](#), but lower death rates than the general population in New York City, experts have revealed.

The **September 11 attacks**, also known as the **9/11 attacks** or simply **9/11** occurred on Tuesday, September 11, 2001. Four suicide attacks were carried out against the USA:

- 19 terrorists belonging to al-Qaeda hijacked four passenger planes.
- Two of the passenger jets were intentionally crashed into the twin towers of the World Trade Center (WTC) in New York City. Within two hours both towers collapsed.
- Another passenger jet was deliberately crashed into the Pentagon, Arlington, Virginia.
- The fourth passenger jet failed in its terrorist suicide mission. Passengers took control of the plane from the terrorists. The plane crashed in a field.

The attacks resulted in the deaths of almost 3,000 people. This article looks at the current health conditions today of individuals who were exposed to the attacks – including civilians and rescue workers.



United Airlines Flight 175 crashes into the South Tower

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Exposed and Unexposed Male Firefighters

A study published in *The Lancet* reported that male firefighters who were exposed to the WTC attack have a higher risk today of developing cancer than their non-exposed peers, as well as the general population of New York city.

Dr. Prezant, Chief Medical Officer of the Fire Department of New York (FDNY) and team from Albert Einstein College of Medicine, Montefiore Medical Center, and also FDNY, carried out a study including 9,853

firefighters – they all had health records which dated back to a long time before 9/11.



New York fire fighters battle blazes at Ground Zero

Cancer rates among firefighters who were exposed to the WTC attack were compared to those who were not exposed.

They found:

- 263 cases of cancer in the exposed group compared to 238 expected from a similar sized group from the general NY city population
- Those in the exposed group had a 10% higher chance of developing cancer compared to the general population of NY city
- Those in the exposed group had a 19% higher chance of developing cancer compared to those in the unexposed group
- 135 cases of cancer in the non-exposed group, compared to 161 expected from a similar sized group from the general NY city population

Firefighters tend to have healthier lifestyles than the general population, they smoke less and are physically fitter.

The researchers were surprised to find that the exposed firefighters had a 58% lower rate of [lung cancer](#) compared to the general population. They also found that firefighters who were exposed did not have a higher lung cancer risk than the unexposed firefighters.

The authors wrote:

“An association between WTC exposure and cancer is biologically plausible, because some contaminants in the WTC dust, such as polycyclic aromatic hydrocarbons, polychlorinated biphenyls, and dioxins, are known carcinogens. Although some contaminants could cause cancer directly, WTC exposure could also trigger chronic [inflammation](#), through microbial infections, autoimmune diseases, or other inflammatory disorders, all of which have been reported as factors in oncogenesis, both experimentally and epidemiologically.

We believe the observed relative excess in cancer cases in WTC-exposed firefighters was unlikely to be the result of non-WTC firefighting exposures, because since 9/11, structural fires have decreased, personal protective equipment has improved, self-contained breathing equipment use has increased, and smoking rates in firefighters have declined.

(conclusion) Our findings support continued monitoring of firefighters and other WTC-exposed cohorts to fully assess cancer risk related to these unique exposures.”

[Link to Abstract of Article](#) 

Death rates by exposed rescue workers and civilians

Another study published in *The Lancet* reported that WTC-exposed civilians and rescue workers have so far had lower overall death rates compared to the general population in NY city.

Dr Hannah Jordan, Dr Steven Stellman, and colleagues at the World Trade Center Health Registry, New York City Department of Health and Mental Hygiene, gathered data on deaths that occurred from 2003 to 2009 from the WTC Health Registry. They categorized the study participants as:

- RRWs – rescue and recovery workers, including volunteers
- NRNRs – non-rescue and non-recovery participants

Among 13,337 RRWs they identified 156 deaths, and among 28,593 NRNRs there were 634 deaths. All 41,930 participants were found to have a 43% lower risk of death compared to the NY city's general population, this was after making adjustments for calendar year, race, sex and age.



Aerial view of Ground Zero, New York City, Sept. 17 2001.

NRNRs had a 39% lower risk of death and the RRWs a 55% lower risk of death, compared to the city's general population, the authors wrote.

Among the RRWs, more exposure was not linked to greater all-cause



authors wrote:

“Because most illnesses that are established or possible sequelae of WTC-related exposures have long latency or long median survival periods, the absence of a relation between reported dust-cloud exposure by itself and mortality risk in our study is not surprising.”

The authors put forward two reasons for lower mortality among the exposed individuals:

- Employed people are generally healthier – the majority of the exposed people were employed.
- Volunteer characteristics – in general, people who volunteer for health studies have a better level of health than the general population.

These effects of being a healthy volunteer and/or healthy worker will gradually diminish, the authors wrote. Later studies will be able to determine whether the death rates will change over time.

The most common health conditions linked to 9/11 exposure have so far been respiratory and mental illnesses. Experts say those who were exposed may be at risk of dying early as a result of an ongoing or new respiratory disease. They add that complications related to mental disorders, such as substance abuse and risk taking behaviors may also raise the risk of premature death.

Only now can evaluations start on the possible cancer risk caused by exposure to 9/11. The authors wrote:

“However, only now has sufficient time passed since the WTC disaster to begin the complex scientific process of determining whether or not cancer may be linked to WTC exposure. Most cancers have many different risk factors and can take decades to develop. As an exception, some blood cancers can develop a few years after exposure.”

They concluded:

“Among World Trade Center Health Registry participants residing in New York City, overall death rates in 2003-09 were not higher than expected when compared to the general New York City population.

However, within the cohort, non-rescue and non-recovery participants with high levels of WTC-related exposure had an increased risk of all-cause mortality and heart-disease-related mortality compared with those with low exposure. Continued monitoring of all-cause mortality and disease-specific mortality will be needed.”

[Link to Abstract of Article](#) ✓

High burden of mental and physical illness among 9/11 rescue and recovery workers a decade later

According to official figures, over 50,000 recovery and rescue workers helped out after the WTC attacks. There is data on 27,449 of them, which shows that they still suffer a high burden of mental and physical illness, Dr Juan P Wisnivesky, Mount Sinai School of Medicine, New York, and colleagues reported in an article published in *The Lancet*.

Dr. Wisnivesky and team gathered data on the WTC Screening, Monitoring, and Treatment Program enrollees, 27,449 of them. The federally funded program provides rescue and recovery workers with regular mental and physical health examinations. The study involved municipal workers, construction workers, firefighters and police officers.



A FDNY deputy chief during rescue efforts

They divided the workers into four categories, which were based on exposure levels (days at the WTC site, work in the pile of debris, and exposure to dust cloud):

- Low exposure (14% of total)
- Intermediate exposure (65% of total)
- High exposure (18% of total)
- Very high exposure (3% of total)

Their average age on the day of the attacks was 38 years.

Below is the cumulative incidence of some medical conditions over a nine-year period:

- Asthma 28%
- Sinusitis 42%
- GERD (gastroesophageal reflux disease) 39%

- Spirometric abnormalities 42%, three-quarters of which were low forced capacity
- Depression 28%
- PTSD (post traumatic stress disorder) 32%
- Panic disorder 21%

The authors wrote:

“Inhalation of toxic, highly alkaline dust (pH=10-11) is the probable cause of upper and lower respiratory injury in rescue and recovery workers.”

Just among police officers, below are the cumulative incidences of some mental conditions over the nine-year period:

- Depression 7%
- PTSD 9%
- Panic disorder 8%

The authors said:

“Previous studies have shown that New York City police officers were at lower risk than some responders for developing [mental health](#) disorders after the WTC attacks. Possible reasons for these findings include training, previous experience in dealing with similar stressors, self-selection of individuals with high resilience during recruitment into the workforce, and possible under-reporting of psychological symptoms because of perceived job-related repercussions.”

Those with the greatest WTC exposure had the highest incidence of most disorders.



Recovery workers at Ground Zero

10% of all rescue and recovery workers were diagnosed with all three disorders – asthma, GERD and sinusitis, and 18% were diagnosed with two of them.

Many exposed workers were diagnosed with both a physical and mental disorder, as shown below:

- 48% were diagnosed with asthma and a mental disorder
- 38% were diagnosed with sinusitis and a mental disorder
- 43% were diagnosed with GERD and a mental disorder
- 69% were diagnosed with PTSD and a physical condition
- 70% were diagnosed with depression and a physical condition
- 72% were diagnosed with panic disorder and a physical condition

The authors concluded:

“Our findings show a substantial burden of persistent physical and mental disorders in rescue and recovery workers who rushed to the site of the WTC and labored there for weeks and months 10 years ago. Many of these individuals now suffer from multiple health problems. The findings of this study emphasise the need for continued monitoring and treatment of the rescue and recovery worker population and underscore the importance of providing adequate health monitoring and treatment for these individuals. Planning for future disasters should anticipate the probability of persistent physical and mental illness in rescue and recovery workers.”

Dr Matthew P. Mauer, New York State Department of Health, Troy, NY, USA, wrote in a linked Comment:

“We now know that, in one of the largest WTC rescue and recovery cohorts, health effects have persisted for almost a decade. These latest findings leave no doubt about the necessity of continuing health monitoring, treatment, and research for WTC rescue and recovery workers.

(conclusion) Fortunately, our knowledge of these effects is rapidly improving, and studies such as that reported by Wisnivesky and colleagues represent important steps forward. One cannot help but wonder what will be reported when we mark the 20th anniversary of this tragedy. For now, the view ahead is still murky, much like the plumes of acrid smoke that rose in New York City a decade ago. “

Written by Christian Nordqvist

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